

## ***Focus . . . Hospital Charges for Workers' Compensation Patients***

Missouri hospital data showed no evidence of consistently higher charges or overuse of procedures for treatment of injuries sustained by Workers' Compensation patients. For both males and females there were injury groups for which the Workers' Compensation patients had lower hospital charges than Non-Workers' Compensation (NWC) patients in both 1993 and 1994. Also, a high percentage of patient records could not be analyzed because Workers' Compensation patients had higher charges for a given diagnosis in one year of the study but lower charges than NWC patients in the remaining year. These inconsistencies characterized 41.7 percent of the male and 24.5 percent of the female outpatients, and 84.0 percent of the male and 65.6 percent of the female inpatients.

Our concern for Workers' Compensation hospital charges arose from S. B. 251, which Governor Carnahan signed into law in 1993. This law comprehensively reformed Missouri's Workers' Compensation insurance to slow increases in the premiums that employers pay. Specifically, the Missouri Department of Insurance granted cumulative rate increases of 163 percent for Workers' Compensation premiums between 1983 and 1992.<sup>1</sup> Among the reforms in the law is a data collection requirement for the Missouri Department of Health to determine "variations and changes in health care costs associated with workers' compensation patients compared with nonworkers' compensation patients." The Missouri Patient Abstract System meets this requirement for data collection as applied to hospitals.

### **Methods**

This study compared Workers' Compensation with NWC patients on the charges hospitals recorded in 1993 and 1994 combined. Other sources of payment included Medicare, Medicaid, other governmental sources, self-pay (the uninsured), all commercial payers (private insurance), and other. Because the charges analyzed for this article were strictly hospital charges, charges from other important providers have been omitted, such as charges from physicians, physical therapists and chiropractors.

To reduce possible differences in the severity of injury between Workers' Compensation and NWC groups, the study was restricted to patients with a single injury diagnosis. Men and women were analyzed separately to take into account employment differences that may result in different injuries. The study was also restricted to patients between the ages of 18 and 64 years to ensure that they were in their peak employment years. Data for black and other minority patients covered by Workers' Compensation in 1993 and 1994 were scant, especially when the restrictions of this study were applied. These patients will be included for study as more data become available.

Injury diagnoses (based on three digits of diagnosis code in the International Classification of Diseases-9-Clinical Modification) were considered for inclusion in the study if at least 50 Workers' Compensation outpatients or at least 35 Workers' Compensation inpatients had the diagnosis during the two year period and the diagnosis fell into one of twelve injury groups (disc disorders, fractures, dislocations, sprains and strains, intracranial injury, open wound, superficial injury, crushing, foreign body in the eye, burns, toxic effects and effects of heat and light). The 1993 charges were adjusted for inflation by 6 percent based on the "hospital and related services" component of the Consumer Price Index. The charges were then examined to determine which four-digit diagnoses had higher or lower mean charges in each year for Workers' Compensation patients. Within each of the twelve injury groups, diagnoses were placed in subgroups depending on whether the charges were higher or lower. If there were patients in only one year with a diagnosis, the diagnosis was classified on the basis of one year of data. If mean charges for a diagnosis were inconsistent for the two years or if either Workers' Compensation patients or NWC patients were missing, the diagnosis was not used in the analysis.

Analysis of covariance was used to analyze each four-digit subgroup to determine whether charges remained higher (or lower) for the Workers' Compensation group after adjusting for other covariates that affect hospital charges. The covariates included year of hospital visit, age of patient, diagnosis group and hospital group. The diagnosis covariate was formed using the twelve injury groups discussed above. The hospital covariate was formed by categorizing hospitals into one of three groups based on their overall average charges for both years. The Workers' Compensation--Non-Workers' Compensation group membership variable was placed last in the model to determine whether it accounted for any variance after the adjustment by the other covariates. Number of procedures was not treated as a covariate because study patients had only one diagnosis, and therefore a difference in procedures would suggest unnecessary service use by one group or the other.

### **Results**

#### **Outpatients**

In 1993 and 1994, 215,098 male outpatients with a single diagnosis were treated for selected injuries. Of these patients, 125,301 (58.3 percent) were included in the analysis and 89,797 (41.7 percent) were excluded, mostly due to inconsistent charges for the two years (Table 1). Of the 144,597 female patients who had one injury diagnosis, 109,225 (75.5 percent) were included in the analysis and 35,372 (24.5 percent) were excluded, again mostly due to inconsistent charges.

As shown in Table 2, most injury groups were mixed, with some subgroups showing higher charges for Workers' Compensation patients and some showing higher charges for NWC patients. For example, within the injury group *disc disorders*, the diagnoses 7221, 7225, 7227, 7231 and 7234 had higher charges for male Workers' Compensation patients, whereas diagnoses 7222, 7223, and 7228 had higher charges for NWC patients. For only two small injury groups—crushing and foreign body in the eye—were male Workers' Compensation patients always charged more than NWC patients.

Out of the ten subgroups where Workers' Compensation patients had significantly higher charges, only five had significantly higher mean number of procedures: disc disorders, sprains and strains, open wound, crushing and burns. Of the four subgroups with significantly higher charges for NWC patients, only open wound showed a significantly higher mean number of procedures.

For women, results were mixed for seven injury groups, with some subgroups showing higher charges for Workers' Compensation patients and some showing higher charges for NWC patients. Results were not mixed for only four injury subgroups. NWC patients had higher charges than Workers' Compensation patients for dislocations, intracranial injury, and toxic effects, with the first two injury groups having significantly higher charges. For the injury subgroup of crushing, Workers' Compensation patients always had significantly higher charges than NWC patients.

Of the four injury groups for which female Workers' Compensation patients had significantly higher charges, three also had significantly higher mean number of procedures: disc disorders, open wound and crushing. Of the five injury groups for which NWC patients had significantly higher charges, three also had significantly higher number of procedures: dislocations, intracranial injuries and open wound.

#### **Inpatients**

When the requirement of at least 35 patients with a diagnosis was applied to male inpatients with a single diagnosis, 6,540 patients met the requirement. Of this group, 1,057 (16.2 percent) patients were included in the analysis and 5,483 (83.8 percent) patients were excluded, mostly due to inconsistent charges. When the criteria for selecting inpatients was applied to women, 3,695 patients met the criteria. Of these patients, 1,273 (34.5 percent) were included in the analysis and 2,422 (65.5 percent) were excluded, again mostly due to inconsistent charges for 1993 and 1994.

For both men and women, disc disorders and fractures were the only injury groups with enough patients to be analyzed. For men with disc disorders and women with fractures, Workers' Compensation patients always had higher charges than NWC patients. Men with fractures and women with disc disorders were each mixed with one injury subgroup showing higher charges for Workers' Compensation patients and another showing higher charges for NWC patients. (The higher charges for the Workers' Compensation patients reached statistical significance, whereas the higher charges for the NWC group did not.)

### **Summary**

Missouri hospital data showed no evidence of consistently higher charges or overuse of procedures for Workers' Compensation patients. This was suggested by the 41.7 percent of male outpatients, 24.5 percent of female outpatients, 84 percent of male inpatients, and 65.6 percent of female inpatients whose records were not analyzed because Workers' Compensation patients had higher charges for a diagnosis in one year but lower charges in the other year. Overuse of resources would likely be manifested as higher charges for the Workers' Compensation patients in both years for a given diagnosis.

Lack of a pattern of discriminatory charging is further evident in the injury groups for both males and females. Within almost all of the three-digit injury groups there were subgroups of four-digit diagnoses for which the Workers' Compensation patients had lower unadjusted charges than the NWC patients in both 1993 and 1994. Adjusting these charges for other variables did not make them higher for the Workers' Compensation patients.

Because this was a study of existing groups and did not involve randomized assignment to groups, any differences in mean charges between the Workers' Compensation and NWC groups may have been related to imperfect control of injury severity or differences in hospital charges patterns. Though the patients had only one diagnosis, this may not have completely controlled for injury severity. The occurrence of a larger number of procedures for some patients could also reflect either slight differences in injury severity or unnecessary use of hospital resources.

A study published by the National Council on Compensation Insurance found higher charges for Workers' Compensation patients. Their results were not strictly comparable to ours because they analyzed total medical bills, including charges from other providers in addition to hospitals.<sup>2</sup> Because our study was restricted to hospital and emergency room data, it did not address the practices of other providers.

### **References:**

1Percent calculated from "History of Workers' Compensation Rate Increases, Missouri Voluntary Market and Assigned Risk Pool," received from Randy McConnell, Missouri Department of Insurance.

2Durbin, David L., et al., Workers' Compensation Medical Expenditures Price v. Quantity: Implications for a Medical Price Index.

<p><b>Table 1</b></p> <p><b>Outpatients with One Injury By</b></p> <p><b>Diagnostic Group and Consistency of Charges 1993 – 1994</b></p>				
	<i>Males</i>		<i>Females</i>	
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
<b>Workers Compensation</b>				
<b>Patients have higher charges in both years</b>				
Workers Compensation	16,171		2,386	
NWC	61,535		17,834	
<b>Total</b>	<b>77,706</b>		<b>20,220</b>	
<b>NWC Patents have higher charges in both years</b>				
Workers Compensation	8,551		12,210	
NWC	39,044		76,795	
<b>Total</b>	<b>47,595</b>		<b>89,005</b>	
<b>Usable Total</b>	<b>125,301</b>	<b>58.3%</b>	<b>109,225</b>	<b>75.5%</b>
<b>Inconsistent &amp; Other*</b>	<b>89,797</b>	<b>41.7%</b>	<b>35,372</b>	<b>24.5%</b>
<b>Grand Total</b>	<b>215,098</b>	<b>100.0%</b>	<b>144,597</b>	<b>100.0%</b>

\*Of the 89,797 male patients classified as "inconsistent and other," 88,802 (98.9%) had inconsistent charges, 617 (0.7%) had diagnoses with too few patients to be analyzed, and 378 (0.4%) had no comparison group for one year. Of the 35,372 female patients classified as "inconsistent and other," 34,667 (98%) had inconsistent charges, 395 (1.1%) had too few patients to be analyzed, and 310 (0.9%) had no comparison group for one year.

Table 2 Male Outpatients with One Injury Diagnosis					
<i><u>Injury Clusters<sup>1</sup></u></i>	<i><u># Patients</u></i>	<i><u>Adjusted Mean Charges</u></i>	<i><u># Patients</u></i>	<i><u>Adjusted Mean Charges</u></i>	
Disc Disorders		Fractures			
WC patients with higher charges					
Workers Compensation	1,484	*1,247	1,816	*1,131	
NWC	4,391	909	11,201	941	
NWC patients with higher charges					
Workers Compensation	57	*351	55	*941	
NWC	324	1,023	362	1,343	
Dislocations		Sprains & Strains			
WC patients with higher charges					
Workers Compensation	259	*1,030	5,588	*728	
NWC	2,578	833	22,431	652	
NWC patients with higher charges					

Workers Compensation	399	1,779	1,827	537
NWC	1,792	1,774	6,775	591
<b>Intracranial</b>	<b>Open Wound</b>			
WC patients with higher charges				
Workers Compensation	59	841	707	*745
NWC	286	835	2,851	527
<b>NWC patients with higher charges</b>				
Workers Compensation	176	718	4,144	*827
NWC	1,183	875	19,394	884
<b>Superficial Injury</b>	<b>Crushing</b>			
WC patients with higher charges				
Workers Compensation	3,449	*296	431	*603
NWC	11,645	260	562	411
<b>NWC Patients with higher charges</b>				
Workers Compensation	1,430	*237	too few	
NWC	8,094	287		
<b>Foreign Body in Eye</b>	<b>Burns</b>			
WC patients with higher charges				
Workers Compensation	1,805	*243	477	*428
NWC	4,463	214	995	356
<b>NWC Patients with higher charges</b>				
Workers Compensation	none		325	231
NWC	none		726	255
<b>Effects of Health &amp; Light</b>				
WC patients with higher charges				
Workers Compensation	96	*852		
NWC	132	548		
<b>NWC Patients with higher charges</b>				
Workers Compensation	138	385		
NWC	394	447		

\*p<0.5

1No male outpatients had injuries due to toxic effects. Data for females not shown due to space limitations.

## Provisional Vital Statistics for September 1996

**Live births** increased in September primarily because of a longer reporting period as the birth rate actually decreased from 14.0 per 1,000 population in September 1995 to 13.6 this September.

**Cumulative births** for the 9- and 12-month periods ending with September both show slight decreases. For the first three quarters of the year, the birth rate decreased from 14.0 to 13.8 per 1,000 population.

**Deaths** show little change from the previous year for all three time periods shown below.

The **Natural increase** in Missouri in September was 2,289 (6,379 births minus 4,090 deaths). The rate in September increased from 4.5 to 4.9 persons added per 1,000 population.

**Marriages** decreased for all three time periods shown below.

**Dissolutions of marriage** decreased in September but increased for the cumulative 9- and 12- month periods ending with September.

The **infant deaths** increased in September but decreased for the 9- and 12-month periods ending with September. For the first three-quarters of the year the infant death rate decreased slightly from 7.5 to 7.4 per 1,000 live births.

**PROVISIONAL RESIDENT VITAL STATISTICS FOR THE STATE OF MISSOURI**

<u>Item</u>	September			Jan.-Sept. cumulative		
	<u>Number</u>		<u>Rate*</u>	<u>Number</u>		
	<u>1995</u>	<u>1996</u>		<u>1996</u>	<u>1995</u>	
<b>Live Births</b>	5,688	6,379	14.0	13.6	55,313	55,223
<b>Deaths</b>	3,855	4,090	9.5	8.7	40,425	40,667
<b>Natural increase</b>	1,833	2,289	4.5	4.9	14,888	
<b>Marriages</b>	4,879	4,450	12.0	9.5	34,644	
<b>Dissolutions</b>	1,996	1,765	4.9	3.8	19,208	
<b>Infant deaths</b>	39	53	6.9	8.2	417	
<b>Population base</b> (in thousands)	...	...	5,324	5,352	...	

\*Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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